

The Office Action stated that the 112 rejection is withdrawn, for which the Examiner is thanked, and that the rejection of paper number 9 is repeated in its entirety and incorporated herein. Despite the ambiguous use of the singular term "rejection", it is understood that the Office Action in fact is meant to incorporate both the rejection under 35 U.S.C. § 102 and the rejection under 35 U.S.C. § 103 set forth in the previous Office Action of April 30, 2001. If, however, the Examiner intended otherwise, the Examiner is respectfully requested to contact the undersigned so that suitable corrective action can be taken

The Rejection Under
35 U.S.C. § 102

Claims 14, 16, 17, 20, 23, 25, 26, 28, 34, 36, 37 and 40 were rejected under 35 U.S.C. § 102(b) as being anticipated by either U.S. Patent No. 5,772,803 to Peker et al., U.S. Patent No. to 4,341,260 to Ishibachi et al., or Japanese Laid-Open Patent Appln. No. 57-108237 ("JP '237"). Applicants respectfully traverse these rejections and submit the following arguments in support thereof.

Applicants' invention, as set out in claim 14, is directed to a spring formed from spirally arranged amorphous metal lying in a plane, and which serves as a source of power. As recited in claim 23, this invention also concerns a mainspring formed from spirally arranged amorphous metal lying in a plane. According to claim 34, this invention encompasses a hairspring formed from spirally arranged amorphous metal lying in a plane. Applicants' invention, as set forth in claim 54 (not included in this rejection, but discussed for completeness), also concerns a mainspring having a plurality of spirally arranged laminated amorphous metal sheets lying in a plane.

In other words, each of the independent claims provides for a spring made from a spirally arranged piece (or pieces) of metal which lie in a plane. It will be understood that this spring arrangement is different from a helical spring.

As will be explained in detail below, none of the cited references even suggests all the features of the claimed invention, in particular, a planar spring.

None of the springs depicted in Peker are spiral springs lying in a plane, as is claimed. Rather, the springs shown in Figs. 1A-C are torsional springs which lie in more than one plane. The end portions of the torsional spring shown in Figs. 1A and 1B of Peker which are displaced relative to one another to produce the spring force do not lie in a single plane, as is the case for the claimed invention's springs, but rather, they lie in separate planes. As for Fig. 1C of Peker, that helical spring clearly does not lie in a plane

Peker therefore does not identically disclose all the features of the claimed invention, and so cannot anticipate the invention.

Ishibachi merely discloses a method of producing amorphous metal tape. Nowhere does Ishibachi contain any teaching or suggestion of a spiral spring lying in a plane, as is claimed (Ishibachi only discusses how amorphous metal tapes are made). Ishibachi therefore also does not identically disclose all the features of the claimed invention.

Lastly, JP '273 teaches leaf-type contact springs suitable for use in securing batteries. Such springs are not spiral spring, much less spiral springs of amorphous material located in a plane, as is claimed.

It is well-accepted that a reference which lacks all the features of a claimed invention cannot anticipate that invention. As just noted, neither Peker, Ishibachi nor JP '237 suggests the aspects of the claimed invention relating to a spirally arranged amorphous metal

spring lying in a plane. Accordingly, none of these references anticipates the claimed invention, and so this rejection cannot stand.

The remaining rejected claims, claims 16, 17, 20, 25, 26, 28, 36, 37 and 40, all ultimately depend from and so incorporate by reference all the features of independent claims 14, 23 and 34. Further, claims 55-57, dependent upon claim 54, already discussed. These dependent claims therefore patentably distinguish over the cited art at least for the reasons already given with regard to their respective base claims, which reasons are incorporated by reference herein.

For all the foregoing reasons, favorable reconsideration and withdrawal of this rejection are respectfully requested.

The Rejection Under
35 U.S.C. § 103

Claims 14-40 were rejected under 35 U.S.C. § 103 as being unpatentable over Peker et al., Ishibachi et al., or JP '237. Applicants respectfully traverse this rejection and submit the following arguments in support thereof.

Independent claims 14, 23 and 34, as well as claim 54 (which was not included in this rejection) already have been summarized in connection with the foregoing rejection under § 102, and reference is now made to such claim summaries.

As previously noted, none of the cited references, whether taken alone or in combination, suggests the aspects of the present invention relating to a spiral spring which lies in a plane. Peker, does not teach such a spring shape, Ishibachi only teaches a scheme for manufacturing amorphous material, not springs, much less springs as claimed, and JP '237 only is concerned with leaf springs that serve as electrical contacts, not spiral driving springs, as

claimed. Since all of these references suffer from the same deficiency, the combination of these references also suffers from that deficiency, and so the claimed invention avoids this combination of references for the same reasons it avoids the references alone.

Moreover, the '237 reference teaches away from the present invention because the '237 reference uses amorphous spring material to form a contact spring is evidence of the non-obviousness of the present invention.

Taking the cited references together, the only springs taught therein are the torsion bars or helical springs of Peker and the electrical contact springs of JP '237. At most, one skilled in the art would be led to fabricate such torsional, helical or contact springs using the materials taught by Ishibachi, but they would not be led to the claimed spirally arranged amorphous metal spring lying in a plane as is now claimed.

The comments at page 2 of the Office Action suggest that Applicants have not introduced evidence of unexpected results. Applicants respectfully disagree. One benefit of the claimed invention is that it provides a thinner spring than the springs disclosed in the art such as Peker, and this, it will be appreciated, means the size of the device using such a spring can be reduced. Furthermore, as noted in Applicants' response to the previous Office Action, the application itself contains evidence of the unexpectedly superior results obtained using this invention when compared with conventional spiral watch springs; significantly, the duration of the period during which the spring provides power can be extended and the driving mechanism can be moved at a more constant speed, as set out in Figs. 1, 3 and 4, and discussed at pages 5-10 and 15 of the specification. In particular, Figs. 3 and 4 depict the unexpected and remarkably superior properties of the present invention as compared with a conventional spring.

The remaining rejected claims, claims 15-22, 24-33 and 35-40, all ultimately depend from and so incorporate by reference all the features of independent claims 14, 23 and 34. Also, claims 55-57 depend from claim 54, which also has been shown to avoid the cited art. Accordingly, these claims therefore patentably distinguish over the cited art at least for the same reasons as their respective base claims, which reasons are incorporated by reference herein.

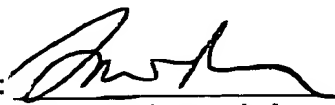
For all the foregoing reasons, favorable reconsideration and withdrawal of this rejection are respectfully requested.

CONCLUSION

Applicants respectfully submit that all outstanding rejections and objections have been addressed and are now either overcome or moot. Applicants further submit that all claims pending in this application are patentable over the prior art. Reconsideration and withdrawal of those rejections and objections is respectfully requested.

Early and favorable consideration of the above referenced application in light of these amendments is earnestly requested.

Respectfully submitted,

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Attachment: "Version Marked to Show Changes Made"

VERSION MARKED TO SHOW CHANGES MADE:

Cancel claims 41-53 and 58-70 without prejudice to or disclaimer of the subject matter presented therein.

Amend claims 14, 23, 34 and 54:

14. (Twice amended) A spring, said spring being formed of spirally arranged amorphous metal lying in a plane and serving as a source of power.

23. (Twice amended) A mainspring, said mainspring being formed of spirally arranged amorphous metal lying in a plane.

34. (Twice amended) A hairspring, said hairspring being formed of spirally arranged amorphous metal lying in a plane.

54. (Amended) A mainspring comprising a plurality of spirally arranged laminated amorphous metal sheets lying in a plane.